

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 10/797,102
Attorney Docket No.: Q80311

REMARKS

Claims 1-19 are all the claims pending in the application. By this Amendment, Applicant adds claims 20-24, which is clearly supported throughout the specification *e.g.*, Figs. 6 and 7 and ¶¶ 34, 41, and 42.

Preliminary Matters

The Examiner has not returned the initialed forms PTO/SB/08 for the Information Disclosure Statements filed on November 23, 2005 and March 30, 2006. The Examiner is respectfully requested to return these initialed forms with the next patent office communication.

The Office Action again does not address the features of claims 2-4, 8, 11, and 12. Applicant respectfully requests the Examiner to indicate allowance of these claims or to address the features of these claims. It is Applicant's position that these features are not disclosed in the prior art of record. For example, in the Amendment under 37 C.F.R. § 1.111 filed on March 15, 2006, arguments have been set forth with respect to claims 8 and 11. These arguments are incorporated herein by reference and stand unrebutted by the present Office Action.

Claim Rejections

Claims 1-19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,767,601 to Uchiyama (hereinafter "Uchiyama") in view of U.S. Patent No. 3,196,304 to Koehly et al. (hereinafter "Koehly") and further in view of U.S. Patent No. 5,304,885 to Wong et al. (hereinafter "Wong"). Applicant respectfully traverses these grounds of rejection in view of the following comments.

Of these rejected claims, claims 1, 16, and 17 are independent.

Independent claim 1, among a number of unique features, recites: "...each of the two end plates has a first portion that is laid on the first portion of each of the teeth and a second portion that is laid on the second portion of each of the teeth, at least the first portion of each of the two end plates is smaller in circumferential width than the first portion of each of the teeth, and at least the second portion of at least one of the two end plates is made of a non-magnetic metal material." The Examiner alleges that claim 1 is related to a magneto-generator and is obvious in view of Uchiyama, Koehly, and Wong. Applicant respectfully disagrees.

In an exemplary, non-limiting embodiment of the present invention, two end plates are provided to sandwich the laminated core therein between. The two end plates are made of a metal material to increase their rigidity and thereby hold, in a prescribed shape, generation coils that are wound on the teeth of the stator core. To increase the insulation between the generation coils and the teeth, the circumferential width of a first portion, extending in the radial direction, of each of the end plates is made smaller than that of a corresponding first portion of a laminated core. A second portion of the two end plates is made of a non-magnetic metal material, whereby the magnetic loss is reduced and the temperature characteristic and the power generation characteristic are improved. It will be appreciated that the foregoing remarks relate to the invention in a general sense, the remarks are not necessarily limitative of any claims and are intended only to help the Examiner better understand the distinguishing aspects of the claims mentioned above.

The Examiner alleges that Koehly discloses two end plates sandwiching the laminated core therein between. The Examiner acknowledges that Koehly fails to disclose a second portion of the plates. The Examiner, however, alleges that Wong cures the deficient teachings of Koehly

and that one of ordinary skill in the art would have been motivated to combine Uchiyama with Koehly and Wong to protect the windings from damage and to reduce the build up of dust (*see* pages 3-4 of the Office Action). Applicant respectfully disagrees.

Koehly discloses a protective means for insulation. In particular, Koehly discloses having solid metal ribs 34 in alignment with each of the teeth T and extending longitudinally thereof (Figs. 7; col. 4, lines 10 to 20). Koehly further discloses that using cast metal for integral formation of the hub portion 33 as well as rib means 34 “avoids the formation of pin-size holes due to presence of any voids or open spaces since the rib means 34 are **cast of solid metal**” (col. 5, lines 7 to 11).

Koehly fails to disclose or suggest the ribs having a second portion that will protrude on the second portion of each of the teeth (the portion that projects in a circumferential direction from an outer end of the first portion of the teeth). Moreover, Koehly discloses the ribs being of solid metal but fails to disclose non-magnetic metal material. In fact, since there are no permanent magnets in the disclosure of Koehly (as acknowledged by the Examiner by withdrawing the previous rejection), Koehly would not suggest using a non-magnetic metal for the ribs (alleged plates). In short, Koehly does not disclose or suggest the second portion of the end plates, as set forth in claim 1. Further, Koehly does not disclose or suggest the second portion of at least one of the end plates being made of non-magnetic, metal material.

Wong fails to cure the deficient teachings of Koehly. Wong discloses that to ensure that the windings are tightly packed and to avoid chaffing between the wire and stack, it is necessary to pack windings under a tension. When wires are wound onto the stems, cuts maybe formed in the layer of insulation coating due to tension. Accordingly, Wong discloses placing a spoked

plastic disc (spiders 10) against the outer surface of each end lamination to prevent damage to the wound wires of each coil (col. 1, lines 5 to 30). The spiders 10 are made of electrically insulating material formed by plastic molding techniques (col. 4, lines 1 to 4).

In particular, in Wong, a laminated stack 3 has a number of T-shaped laminations and spiders 10A and 10B which fit snugly against a respective end face of the armature stack 3. The spiders 10A have spokes 20 and arms 24. One surface of the spokes 20 is mating planar surface 21 and the opposing surface 22 is an arcuate surface (*see* Abstract; Figs. 1 and 2; col. 2, lines 46 to 56). The spokes 20 are formed integrally with circumferentially extending arms 24. The lamination arms extend somewhat beyond the ends of the arms 24 (col. 4, lines 1 to 13 and 19 to 30).

Wong, however, only discloses having one spider on each tooth. In other words, in Wong, there are no two end plates and as such there is only one second portion on each tooth. That is, Wong fails to disclose or suggest each of the two end plates having a second portion that is laid on the second portion of each of the teeth. In other words, even if Koehly and Wong are somehow combined, there would be only one second portion on each tooth. In short, Wong does not disclose or suggest each of the two metal plates (that sandwich the laminated core) having a second portion, as set forth in claim 1.

Furthermore, in Wong, the spiders 10 are formed from the electrically insulating material (plastic). In Wong, the material has to be non-metallic since metal conducts electricity. Moreover, Wong's spiders 10 cannot be metallic as it would make cuts in the insulation coating of the wire. In other words, if the spiders 10 were made metallic that would defeat the whole purpose of Wong (*i.e.*, preventing damage to the coil (specifically, to its insulation layer)). In

short, Wong clearly teaches away from having the spiders being made of metal. Wong fails to disclose or suggest having the spiders being made of non-magnetic metal material, thereby increasing rigidity and reducing the magnetic loss and improving power characteristics. In sum, Wong does not cure the deficient teachings of Koehly in that it fails to disclose or suggest the second portion being made of a non-magnetic metal material.

Furthermore, one of ordinary skill in the art would not have been motivated to combine the two references in the manner suggested by the Examiner. If the second portion would be made of metal (as suggested by the Examiner), then the winding wire would not be protected from damage (the purpose of Wong). In other words, even if one of ordinary skill in the art would have somehow combined Koehly and Wong, then the first and second portions would have been plastic, as disclosed by Wong, to prevent accumulation of dust and damage to the winding wire. Such combination, however, would defeat the purpose of Koehly, as plastic plates would not facilitate uniform covering of the laminated teeth with insulation. In short, but for the present invention, there is no motivation to combine the two references, as suggested by the Examiner.

Therefore, “each of the two end plates has a first portion that is laid on the first portion of each of the teeth and a second portion that is laid on the second portion of each of the teeth, at least the first portion of each of the two end plates is smaller in circumferential width than the first portion of each of the teeth, and at least the second portion of at least one of the two end plates is made of a non-magnetic metal material,” is not obvious in view of Uchiyama, Koehly and Wong, which lack having each of the two end plates having a second portion, and at least one of the second portions being made of non-magnetic metal material. For at least these

exemplary reasons, claim 1 is patentable over the combined teachings of Uchiyama, Koehly, and Wong. Therefore, it is appropriate and necessary for the Examiner to withdraw this rejection of claim 1 and its dependent claims 2-15.

Dependent claim 13 recites: “wherein the second portion of at least one of the two end plates has a projection portion that projects from the second portion of a respective tooth.” The Examiner alleges that Koehly’s projection 39 discloses the projection as set forth in claim 13 (*see* page 4 of the Office Action). Applicant respectfully disagrees.

The projection 39 of Koehly extends from the portion that extends in a longitude direction of the tooth *i.e.*, from the portion along the length of the tooth (Fig. 9; col. 4, lines 57 to 74). In other words, Koehly does not disclose or suggest having a projection from the second portion *i.e.*, portion that extends in the circumferential direction. Furthermore, Wong explicitly discloses that the arms 24 (alleged second portion) have little inherent strength, “they are deliberately made somewhat shorter than the arms of the laminations so as not to be subjected to undue strain when the armature wires are being wound onto the lamination stack” and so as not to interfere with the feeding of the wires (col. 3, lines 44 to 52). In other words, Wong clearly teaches away from having any protrusions on the arms 24 (alleged second portion). In short, the combined disclosure of Uchiyama, Koehly, and Wong do not disclose or suggest the unique features of claim 13. For at least these additional reasons, claim 13 is patentable over the prior art of record.

Independent claim 16, among a number of unique features recites: “each of the two end plates is made of a non-magnetic metal material and has...a second portion that is laid on the second portion of each of the teeth, and the second portion of each of the two end plates has a

projection projecting in a direction along the rotating axis.” As explained above, the combined disclosure of Ichiyama, Koehly, and Wong, do not disclose or suggest the two end plates sandwiching the laminated core and each having a second portion. Further, the prior art of record does not disclose or suggest the plates being made of non-magnetic metal material. In addition, the prior art of record does not disclose or suggest having a projection from the second portion of each of the two end plates. For at least these exemplary reasons, claim 16 is patentable over the combined disclosure of Ichiyama, Koehly, and Wong. Claim 18 is patentable at least by virtue of its dependency on claim 16.

Independent claim 17 recites: “each of the two end plates is made of a non-magnetic metal material and has a first portion that is laid on the first portion of each of the teeth and a second portion that is laid on the second portion of each of the teeth.” As explained above, the combined disclosure of Ichiyama, Koehly, and Wong fail to disclose or suggest at least these unique features of claim 17. Claim 19 is patentable at least by virtue of its dependency on claim 17.

New Claim

In order to provide more varied protection, Applicant adds claims 20-24. Claim 20 is patentable at least by virtue of its dependency on claim 1.

Claim 21 is patentable at least by virtue of its recitation of “a circumferential width of each of the first portion of each of the two end plates is smaller than the circumferential width of each of the first portions of each of the teeth, a circumferential width of each of the second portion of each of the two end plates is smaller than the circumferential width of each of the

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second portions of each of the teeth, and at least the second portion of at least one of the two end plates is made of a non-magnetic metal material.”

Claim 22 is patentable at least by virtue of its recitation of “a circumferential width of each of the projection portions of each of the two end plates is larger than the circumferential width of each of the first portions of each of the teeth, and each of the projection portions of the two end plates is made of a non-magnetic metal material.”

Claims 23 and 24 are patentable at least by virtue of their dependency on claims 21 and 22, respectively.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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23373

CUSTOMER NUMBER

Date: September 6, 2006

Attorney Docket No.: Q80311